N°. XLI.

A Botanical deſcription of the PODOPHYLLUM DIPHYLLUM *of Linnæus, in a Letter to* CHARLES PETER THUNBERG, M. D. *Knight of the Order of Waſa, Profeſſor of Medicine and Botany in the Univerſity of Upſal, &c. &c.*

DEAR SIR,

Read May 18, 1792. IN the time of Tournefort, and for many years after his death, the *Anapodophyllon* of this great botaniſt was conſidered as a genus of which there was known but one ſpecies, viz. the *Anapodophyllon Canadenſe Morini.* When the name of this plant was afterwards altered, by Linnæus, to that of *Podophyllum*, he denominated the ſpecies, which had been previouſly deſcribed by Tournefort, by Cateſby, by Mentzelius, and by ſome other botaniſts, *peltatum*, from the target-ſhape of the leaves.

In the firſt edition of the *Species Plantarum*, this is the only ſpecies of *Podophyllum* which we find mentioned, or deſcribed. In the ſecond edition, which was publiſhed in 1762, we find another ſpecies, under the name of *diphyllum.* The two plants now ſtand oppoſed to each other, in the following conciſe characters: viz.

1. PODOPHYLLUM peltatum foliis peltatis palmatis, and

2. PODOPHYLLUM diphyllum foliis binatis ſemicordatis.

Theſe characters have been preſerved in all the ſubſequent editions of the *Species Plantarum* and *Syſtema Vegetabilium* that I have ſeen.

With

With the firſt of theſe ſpecies Linnæus could not but have been pretty well acquainted, as it had been figured and deſcribed by Tournefort, by Cateſby*, by Mentzelius, and other botaniſts, before him, and as he tells us he had an opportunity of examining the living plant. Of the other *ſuppoſed* ſpecies of *Podophyllum*, his knowledge was much leſs complete. In the *Species Plantarum*, he mentions it as a native of Virginia, on the authority of his friend Mr. Peter Collinſon, and gives the following deſcription of it. "Fo- "lia *radicalia, petiolata, binata ut in Hymenæa, glabra, in-* "*tegerrima, ſemicordata, abſque pedicellis.* Scapus *ra-* "*dicalis, uniflorus, fructu antecedentis*" (i. e. *Podophyllum peltatum*). "Flos *mihi non viſus.*"

In the thirteenth edition of the *Syſtema Naturæ*, printed at Vienna, in 1770, Linnæus ſtill retains the two ſpecies of *Podophyllum*, which I have mentioned: but, at this period, he ſeems to be uncertain whether his *diphyllum* is actually a ſpecies of the genus to which he originally referred it, as appears from the following words, ſubjoined to the ſpecifick character of the plant: viz. "*an Sangui-* "*nariæ ſpecies? cum Folium unicum binatum & Scapus* "*aphyllus radicalis & Capſula oblonga.*" He then tells us that he has not ſeen the flowers, and that the plant was ſent to him (I preſume, either by Collinſon or by Gronovius) as a ſpecies of *Podophyllum.*

In the quarto-edition of the *Flora Virginica* of my induſtrious countryman Dr. John Clayton†, which was publiſhed

* Cateſby's figure is not very accurate.

† The fate of thoſe few perſons who have cultivated botanical knowledge in North-America, has been rather ſingular. The labours of Mr. John Baniſter were not inconſiderable, but they are ſwallowed up in the extenſive writings of Mr. Ray, and not one botaniſt in a thouſand knows any thing of them. The ſervices of Clayton were greater. In collecting, and in inveſtigating the hiſtory of plants, his enthuſiaſm and his induſtry were immenſe. He tranſmited his ſpecimens and annotations to Gronovius, who could not have found it a difficult taſk to arrange the plants into a ſyſtematic form. The *Flora Virginica* is a reſpectable work, with which no botaniſt ſhould be unacquainted. In reading this work, it is a duty which we owe to merit to conſider the volume as the labour of Clayton and not of Gronovius, who kindly robbed the American botaniſt of the honour of his diſcoveries, whilſt he reapt the pecuniary profits of his toils.

liſhed by Gronovius, at Leyden, in 1762, I find that both the ſpecies of *Podophyllum* mentioned by Linnæus, are enumerated among the indigenous vegetables of Virginia. In this excellent work, after giving the Swediſh naturaliſt's ſhort ſpecifick character of the *Podophyllum diphyllum*, Dr. Clayton adds the following deſcription of his own: "Podophylli vel Nelumbonis ſpecies foliis reniformibus, in petiolis longiſſimis erectis e radice immediate egreſſis, binatim diſpoſitis, ſubtus glaucis: fructu magno coriaceo luteſcente uniloculari, per maturitatem ad apicem operculi inſtar horizontaliter dehiſcente: ſeminibus oblongis lucidis ſpadiceis. Flores nondum videre licuit. Maji initio ſolo ſubhumido & fertiliſſimo ſub arborum excelſarum tegumine, convallibus & clivis montium collegi*."

This is all the information that I have been able to collect, from the writings of botaniſts, concerning the *Podophyllum diphyllum* of Linnæus. In the *Hortus Kewenſis* of Mr. Aiton, a work which contains excellent deſcriptions of a conſiderable number of new, or hitherto imperfectly deſcribed, ſpecies of North-American plants, no mention is made of it. I preſume, it muſt have been unknown to Mr. Iuſſieu, when he publiſhed his *Genera Plantarum ſecundum Ordines Naturales diſpoſita*, in the year 1789, otherwiſe this able botaniſt would not have omitted the mention of it, in drawing the characters of the two genera *Podophyllum* and *Sanguinaria*, to both which our plant is nearly related. Neither do I find any mention made of this plant by Dr. Schoepf†, and ſome other late writers, who after *riding poſt-haſte* through the countries of the United-States, have publiſhed volumes of *Travels*, &c.

I have

* See page 81.

† This Gentleman is the author of a trifling work entitled *Materia Medica Americana potiſſimum regni vegetabilis*. Erlang: 1787; alſo of a work, in two volumes octavo, entitled *Reiſe durch einige der mittlern und ſudlichen vereinigten Nordamericaniſchen Staaten*, &c. printed, at the ſame place, in the following year, and of ſome other publications.

I have often ſought for this ſuppoſed ſpecies of *Podophyllum*, in the woods of Pennſylvania. Miſlead by Linnæus, who, at one time, deſcribes it as a ſpecies of this valuable genus, and at another time ſeems uncertain whether it is not a ſpecies of *Sanguinaria*, or *Puccoon*, I hoped to diſcover it in the neighbourhood of its relations, which are among the number of the moſt common vegetables of Pennſylvania, both on the eaſtern and on the weſtern ſide of the Alleghaney-Mountains. I ſought, however, without ſucceſs. Some of my botanical friends have been more fortunate. Mr. William Bartram has ſeen it, but not in flower, in the country of the Cheerake-Indians, where it grows abundantly. Another gentleman has obſerved it, growing on the ſide of a mountain, in a rich ſoil, near the river Monaungahela, in the county of Fayette, and ſtate of Pennſylvania. The ſame gentleman obſerved prodigious quantities of it on the Holſten, below the north-fork of this river, in the ſtate of North-Carolina. In neither of theſe ſituations, however, did he ſee it in flower.

About two years ſince, Mr. Andrew Michaux, an induſtrious French botaniſt, who has been travelling, for ſome time, through different parts of our States, diſcovered this vegetable on the Blue-Ridge, near the head of the Roanoke-River, in Virginia. It grew in a rich, loamy, humid ſoil, and generally under the ſhades of the large foreſt-trees of the mountains, ſituations correſponding to thoſe in which it had been diſcovered by the accurate and indefatigable Clayton, many years before him. Mr. Michaux ſays, the plant did not ſeem to have an extenſive ſpread, but that it was very common in two particular places. He did not ſee it in flower.

From a root of this vegetable, which was ſent to Mr. William Bartram, by Mr. Michaux, there was produced

a fine ſpecimen, which flowered in the beginning of the ſpring of the year 1791, in the neighbourhood of Philadelphia. Mr. Bartram and myſelf carefully examined the plant, in the various ſtages of its growth, and, together, made the drawings which accompany this letter.

Before I proceed to the more immediate deſcription of this plant, I think proper to obſerve, that although it has already been diſcovered in ſeveral different parts of North-America, it is by no means ſo common a plant as the *Podophyllum peltatum* and *Sanguinaria canadenſis*. I have never ſeen an extenſive tract of our country in which theſe plants were not to be found They extend from the top of Canada to the termination of the higher grounds of the two Floridas.—Hitherto, I have not learned that the *Podophyllum diphyllum* of Linnæus has been diſcovered to the eaſt of the great ranges of our mountains. No mention is made of it in the liſt of the plants growing in the vicinity of the town of Lancaſter, in this ſtate, by my friend the Reverend Dr. Muhlenberg, than whom no man has ſtudied the vegetables of a diſtrict with more elaborate attention, and happy ſucceſs*. Dr. James Greenway, a very reſpectable botaniſt, who reſides in Virginia, has never ſeen our vegetable in that ſtate.

I am far, however, from aſſerting that this plant is not a native of the Atlantic parts of North-America. The rich and happy countries of this great continent have, as yet, been very imperfectly explored. America has, indeed, produced ſome few men of talents, who knew nature, and who loved her. Clayton, and the two Bartrams† have done much. But an ocean of undiſcovered pearls remains to be inveſtigated. The electricity of your immortal Linnè

* See this gentleman's *Index Floræ Lancaſtrienſis*.

† John Bartram and his ſon William Bartram. The father has paid the debt of nature: the ſon ſtill lives, as a ſtrong proof that great natural genius will triumph over the difficulties ariſing out of the want of education, and that the ſtudy and contemplation of nature are favourable to the growth of extenſive benevolence and virtue.

ne has hardly been felt in this *Ultima Thule* of ſcience. Had a number of the pupils of that great man ſpread themſelves along, and ſettled in, the countries of North-America, the riches of this world of natural treaſures would have been better known. But alas! the one only pupil of your predeceſſor that has made choice of America as the place of his reſidence, has added *nothing* to the ſtock of natural knowledge. *Video meliora.*

But, I return to my plant.—ITS CLASS AND ORDER.

I had an opportunity of examining four flowers of this vegetable: they aroſe from one common root. Each of theſe flowers was furniſhed with eight ſtamina, and with one piſtillum. From this examination, I ventured to inform ſeveral of my friends, as well foreign as domeſtic, that the *Podophyllum diphyllum* of Linnæus belonged to the claſs and order *Octandria Monogynia* of the ſexual ſyſtem, and that it ſhould ſtand between *Mimuſops* and *Tropæolum.* More obſervations, however, are probably wanting to enable me to aſcertain, with certainty, this part of the hiſtory of the plant. Perhaps, the number of the ſtamina, in particular, is not definite*. But on this head, another ſummer will enable me to give you more certain information.

ITS NATURAL CLASS AND ORDER.

I think, it is a matter of much more conſequence to aſcertain the place of our genus in ſome *natural ſyſtem* of vegetables. I would not wiſh you to think, from this obſervation, that I undervalue the ſexual method of Linnæus. This is ſo far from being the caſe, that I am an implicit believer in the doctrine which aſſerts the exiſtence of ſexes in vegetables, and the neceſſity of an intercourſe

* Since this letter was written, a number of flowers has been produced in the garden of Mr. John Bartram, near Philadelphia. In every inſtance, they were furniſhed with eight ſtamina, and one piſtillum. I preſume, therefore, the place of this plant in the ſyſtem of Linnæus is now well aſcertained.

between them for the purpoſe of perpetuating the ſpecies. I, moreover, greatly admire the ſyſtem of your countryman. In moſt reſpects, it is preferable to the method of Tournefort, or of any other botaniſt. But, ſtill, I cannot help wiſhing that the day may arrive, and, if the phyſicians of Europe continue to cultivate botany as ſome of them have done, it will arrive, when the ſexual arrangement ſhall give way to a more natural method, one in which the order, or aſſemblage, of nature will be purſued more rigorouſly than it has been by Linnæus. I would hardly venture to ſpeak with ſo much freedom to any other pupil of Linnæus. You, Sir, have ſhown, by the plan which you have purſued in your excellent *Flora Japonica*, that you do not implicitly follow the rules of your maſter. Your ſuppreſſion of the four claſſes *Gynandria*, *Monoecia*, *Dioecia*, and *Polygamia*, has always appeared to me to be a moſt judicious ſtep.

The plant under conſideration would be very well placed, between *Sanguinaria* and *Podophyllum*, in Linnæus's twenty-ſeventh natural order, called *Rhoeadeæ*. In the *Genera Plantarum ſecundum Ordines Naturales diſpoſita* of Mr. Juſſieu, a work of extenſive merit, it will have a very natural ſituation in the thirteenth claſs, denominated *Plantæ Dicotyledones Polypetalæ*. *Stamina Hypogyna;* and in the ſecond order, viz. *Papaveraceæ*. Its aſſociates, in this order, will be *Sanguinaria*, *Argemone*, *Papaver*, *Glaucium*, *Chelidonium*, &c.

THE GENERIC CHARACTER.

CALYX. A perianthium, conſiſting of three, four, or five (moſt generally of five), equal, concave, and lanceolate leaves, or pieces, rather ſhorter than the corolla, of a

pale

pale roſe-colour, and falling off ſome time before the expanſion of the flower.

COROLLA. The corolla conſiſts of eight, lanceolate, or narrow, ovate, pointed, ſomewhat concave, and ſpreading petals. In figure, they reſemble the ſegments of the flower-cup, but are larger.

STAMINA. The filaments, or threads, are eight in number, ſimple, ſlender, much ſhorter than the corolla*, and inſerted into the receptacle. The *Antheræ* are flat, large, erect, oblong, and incurved.

PISTILLUM. The germen, or ſeed-bud, is ſuperous, large, oblong, or ovate. The ſtyle is cylindrical, thick, and ſomewhat ſhorter than the filaments. The ſtigma is fleſhy, radiated, or criſped.

PERICARPIUM. A large capſule, turban-ſhaped, pimpled, tapering towards the lower part, thin, unilocular, and divided, on the poſterior part, by a longitudinal ridge. It ſplits, or opens, by a tranſverſe ſuture, or lip, which is more than one half the circumference of the upper part.

SEMINA. The ſeeds are from twelve to twenty in number, lying looſe. They are nearly ovate, and ſmooth.

The foregoing deſcription is not, perhaps, in every reſpect, as accurate as I could wiſh Future obſervations, however, will enable me to render it more worthy of your notice†.

ITS NAME.

From the account which I have given of this plant, I have little doubt that you will agree with me in conſidering it as a genus, diſtinct from the *Sanguinaria* and the *Podophyllum*, to both which, however, it muſt be confeſſed, it bears conſiderable relation. As I have not found

* They are about one fifth of the length of the corolla.

† Since the letter was written, a greater number of flowers of this plant have been examined. In conſequence of this examination, I do not find any neceſſity for altering, in the leaſt, the deſcription which I have given.

found it deſcribed by any authors, except Linnæus and Clayton, neither of whom had ſeen the flowers, and as it is, certainly, a new family, I take the liberty of making it known to the botaniſts by the name of

JEFFERSONIA,

in honour of Thomas Jefferſon, Eſq. Secretary of State to the United-States.

I beg leave to obſerve to you, in this place, that in impoſing upon this genus the name of Mr. Jefferſon, I have had no reference to his political character, or to his reputation for general ſcience, and for literature. My buſineſs was with his knowledge of natural hiſtory. In the various departments of this ſcience, but eſpecially in botany and in zoology, the information of this gentleman is equalled by that of few perſons in the United-States.

Of the genus which I have been deſcribing, we, as yet, know but one ſpecies, which I call

JEFFERSONIA BINATA.

The *root* of this plant is fibrous, very branching, of a pale-brown, or dirty-yellowiſh, colour, and conſiſting of a cortex, or bark, and a woody part. This ligneous portion is of a more lively yellow than the bark. The fibres, including both bark and wood, are not, in general, thicker than a common pin.

The *ſtalks* are ſeveral: they do not branch out at all, but proceed immediately from the crown of the root, ſupporting the leaves, and the flowers. Both theſe leaf and flower ſtalks are naked, commonly about a line in thickneſs, ſmooth, and of a dark green, ſomewhat purpliſh, colour. After the falling off of the flower, the ſtalks, as well as the leaves, &c. encreaſe, very conſiderably, in ſize.

The

The *leaves* are binate, or two-lobed, each lobe being ſomewhat of a ſemi-cordated form, very entire, ſmooth, and of a ſea-green colour on the under ſide. The principal nerves are five in number, in each lobe.

The *flower-cup* has been already deſcribed.

The *corolla*, or *flower*, is of a fine white colour, and ſtands erect, or horizontal, on the ſummit of the flower-ſtalk. There is never more than one flower on the ſame ſtalk.

The *filaments* have been ſufficiently deſcribed. The *antheræ*, or *ſummits*, are yellow.

The *piſtil* has been deſcribed, as has, likewiſe,

The *ſeed-veſſel.*

The *ſeeds* are nearly of a cheſnut-brown colour.

Observations.

The common height of the plant, whilſt in flower, is about ſix or eight inches: after the fall of the flower, it often grows a foot, or ſixteen inches high. The flower continues, for ſeveral days, in perfection and beauty, during which time the germen is viſibly enlarging. The petals now ſuddenly fall off, leaving the germen erect upon the ſummit of the ſtalk. This viſcus encreaſes in ſize very rapidly, changing its figure daily. When it is about three fourths of its mature ſize, it is nearly of an obovate, or turbinated, form, ſomewhat compreſſed on one ſide. During this ſtage of its growth, we plainly diſcern the tranſverſe ſuture, or lips of the inciſion, mentioned in the generic character. When it is completely ripened, the ſeed-veſſel opens, pretty ſuddenly, at this tranſverſe ſuture, upon which the ſuperior part riſes up, and now it appears like a cap, or helmet, diſcovering the naked ſeeds, lying looſe.

looſe. The ſeeds are to be diſperſed. The ſtalk ſupporting their capſule becomes cernuous, or bends downwards, the bending being made a little below the protuberant part of the ſtalk, which I have repreſented in the different figures of the ſeed-veſſel, &c.

The ſeed-veſſel is, for ſome time, of a green-colour: as it advances in ſize, and age, it changes its colour, becoming, at length, of a yellowiſh-hue.

In the garden of Mr. Bartram, before mentioned, the *Jefferſonia binata* flowers early in the ſpring. The ſeeds ripen before mid-ſummer. Soon after this period, the plant withers and decays, but the root continues to live, at a ſmall depth under the ſurface of the ground, encreaſing, by offſets, on all ſides.

As I have not had an opportunity of ſeeing the young plant ariſing from the ſeed, I can ſay nothing reſpecting its placentation.

I conſider the ſcience of botany as being ſo intimately connected with medicine, and with other uſeful arts, and I am ſo unfriendly to the *mere* nomenclatural part of the ſcience, that I once reſolved never to exhibit my deſcription of a new plant, unleſs I could, at the ſame time, give ſome certain account of its properties in medicine, its uſe in diet, or in dying, &c. I have, however, been obliged to alter my determination; for of the *Jefferſonia binata* I know nothing that will ſerve to illuſtrate its hiſtory in either of theſe reſpects. It is, however, worthy of obſervation, that the root of this plant bears a very ſtriking ſimilarity, both in taſte and in ſmell, to the root of our *May-Apple*, the *Podophyllum peltatum* of Linnæus. This taſte is rather nauſeous and bitter, and the ſmell powerful, and not agreeable.

The *Podophyllum peltatum* is a plant much eſteemed by the Cheerake, and other tribes of North-American Indi-

ans,

ans. Its root is uſed as a purgative, emetic, and anthelmintic. I have made a number of experiments with this vegetable, an account of which, together with an engraving of the plant, I propoſe to publiſh, at a future period. Meanwhile, I beg leave to obſerve, that it generally proves purgative, though I have known it, in ſeveral caſes, to operate as an emetic*. The common doſe for an adult is from eighteen to twenty grains of the dried root, in powder. The advantages of this medicine over the Jalap I have often experienced in my practice. In the *firſt place*, being one of the moſt common vegetables in the United-States, it may always be had without the fear of adulteration, or of injury from worms, &c. *ſecondly:* it operates in a ſmaller doſe than either the Jalap or Rhubarb: *thirdly:* it does not ſo frequently as the Jalap prove emetic: *fourthly:* it is not ſo liable to gripe as this laſt-mentioned vegetable, and *laſtly*, it is not ſo nauſeous as either the Jalap or the Rhubarb. I think, it is poſſeſſed of ſome degree of an anodyne, or narcotick, quality.

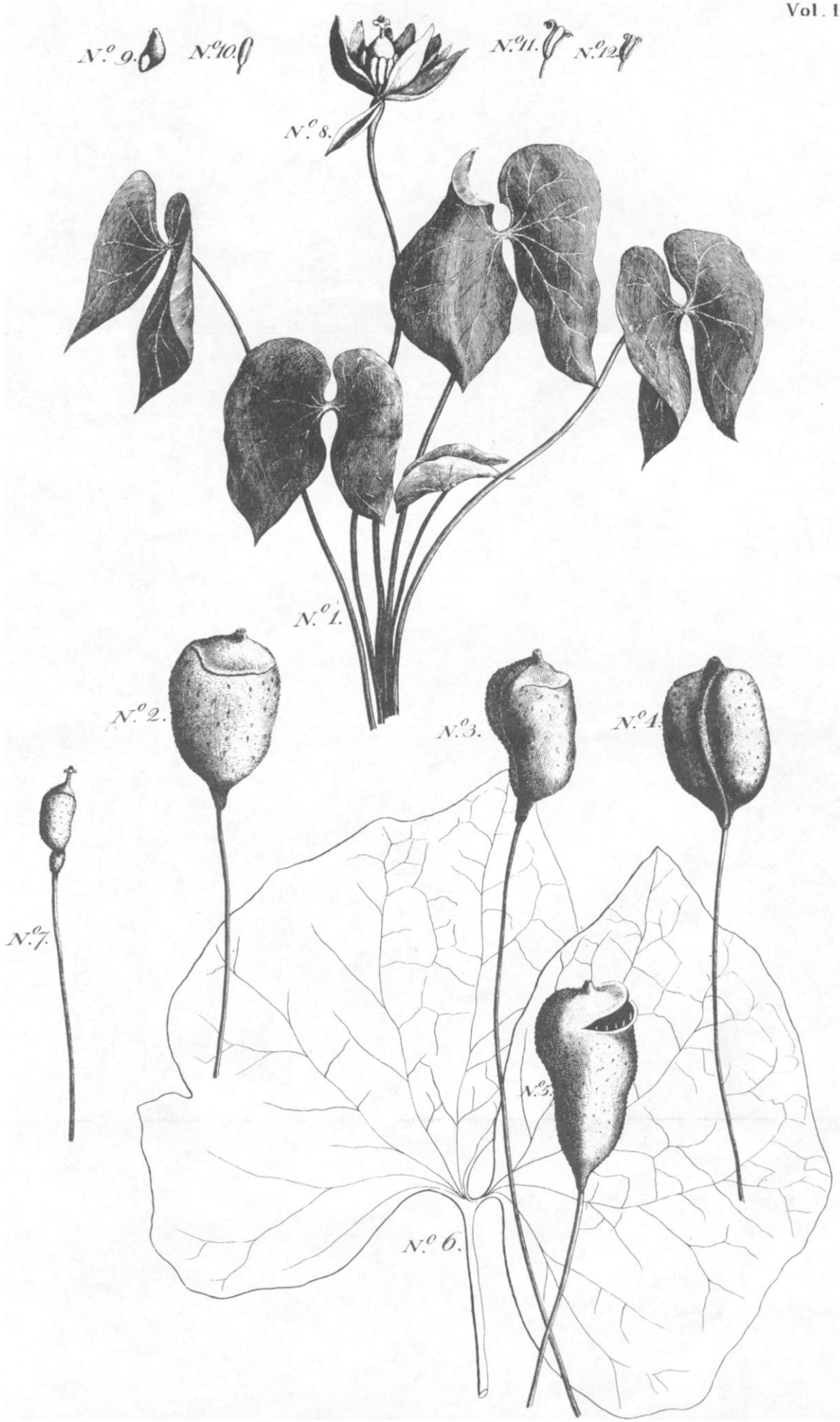
I ſhall endeavour to procure a quantity of the root of the *Jefferſonia*, and ſhall inſtitute a ſeries of experiments, with the view to diſcover its chemical nature, and its effects upon animal bodies. Meanwhile, I am induced to believe, that I ſhall find it poſſeſſed of nearly the ſame properties as the *Podophyllum peltatum.*

* I do not well know how it has happined, that the root of the *Podophyllum peltatum* has ſo generally been conſidered merely as an emetic. It appears from Cateſby, that it is called *Ipecacuanha* in Carolina, and this author ſpeaks of it as an emetic. *The Natural Hiſtory of Carolina*, &c. vol. 1. p. 24. Dr. Schoepf, who ſeldom has any thing good of his own, follows Cateſby in attributing to this plant only an emetic property. Of its purgative quality, or of the doſe, he ſays nothing. See the *Materia Medica Americana potiſſimum regni vegetabilis*, p. 86. A more reſpectable philoſopher, the Count Caſtiglioni, has likewiſe fallen into the ſame error. See *Viaggio negli Stati Uniti dell' America Settentrionale fatto negli anni* 1785, 1786, e 1787. Tomo ſecondo, p. 329. Milano. 1790. As I had not an opportunity of ſeeing this gentleman's travels until after this paper was partly printed, I may be excuſed for mentioning here, what would have been more properly taken notice of at page 336, that the Count Caſtiglioni did not diſcover the *Podophyllum diphyllum*, in the courſe of his travels. "Il *Linneo*," ſays he, "ne annovera un' altra ſpecie ſotto il nome di *Podophyllum diphyllum* ſcoperta dal Sig. "*Collinſon* nella *Virginia*, ma non avendola io veduta, nè eſſendo ſtata ben determinata dallo "ſteſſo *Linneo*, che pone in dubbio ſe poſſa eſſere una ſpecie di *Sanguinaria*, non ne farò altra "menzione." See *Viaggio negli Stati Uniti*, &c. tom. 2. p. 329.

I think, it was the genius of Linnæus which firſt ſuggeſted the idea that, with reſpect to vegetables, the buſineſs of creation is not *ſtationary*: or, in other words, that new plants are conſtantly creating from the admixture, or union, of two diſtinct ſpecies, either of the ſame, or of a different genus.

This idea of your illuſtrious countryman has received very powerful confirmation from the diſcoveries which have been made, of late years, in various parts of the globe. In America, I have obſerved a conſiderable number of theſe new, or *hybrid*, vegetables. Our woods, our fields, and our meadows, are full of them. It is among the *plantæ ſyngeneſiæ*, more eſpecially, that I have obſerved theſe hybrid plants, the offspring of promiſcuous cohabitation. The genera *Solidago* and *Aſter* are, with us, two families of baſtards. Several of the ſpecies of theſe genera, deſcribed by Mr. Aiton, in his excellent *Hortus Kewenſis*, evidently belong to this claſs.

I have ſometimes imagined, that the plant which is the more immediate ſubject of this letter is alſo an hybrid. It is, certainly, a beautiful example of a connecting medium between *Podophyllum* and *Sanguinaria*. Its calix is ſometimes three-leaved, which is the uniform number of the leaves of the calix of the *Podophyllum*. Theſe leaves, in both plants, are coloured, and concave. The root of both has the ſame ſmell, and taſte. To the *Sanguinaria*, our plant is related in the following characters. The calix, in both, is ſhorter than the corolla, and falls off before the expanſion of the flower: the petals are eight in number: the filaments are ſhorter than the corolla: the ſtigma is perſiſtent. But the relation of the *Jefferſonia* to the two genera, juſt mentioned, is, perhaps, ſtill greater than it appears to be, from the mere circumſtances which I have taken notice of. The *facies plantarum*, as Linnæus has very


N.° 9.
N.° 10.
N.° 11.
N.° 12.
N.° 8.
N.° 1.
N.° 2.
N.° 3.
N.° 4.
N.° 7.
N.° 5.
N.° 6.

very well expreſſed the idea, the *phyſiognomy of plants*, as I call it, is a matter which it is not neceſſary a man ſhould be a very minute botaniſt to obſerve. Almoſt any perſon who ſhould ſee the *Jefferſonia*, the *Sanguinaria*, and the *Podophyllum*, growing together, either before, during, or after, the time of flowering, would immediately diſcover their family-relationſhip:

——————*facies non omnibus una*
Nec diverſa tamen, qualis decet eſſe ſororum.

I ſhall conclude this long letter with expreſſing a hope, that it will not prove altogether unentertaining to you; for I cannot but ſuppoſe, that every attempt (mine, I know, is an humble one) to encreaſe the maſs of that amiable ſcience which we both cultivate, will be acceptable to the ſucceſſor of LINNÆUS.

I have the honour to ſubſcribe
myſelf, Dear Sir, Your obliged
friend, &c.

BENJAMIN SMITH BARTON.

Philadelphia, April 29th, 1792.

EXPLANATION of the PLATE.

N°. 1. The plant, of its natural ſize, during the time of flowering.

N°. 2. 3. 4 and 5. Different views of the ſeed-veſſel. N°. 2 and 3 repreſent the horizontal lip, or future, which afterwards opens, diſcovering the ſeeds, lying looſe, as in N°. 5. N°. 4. exhibits the ridge on the poſterior part of the ſeed-veſſel.

N°. 6. A leaf, of the common ſize, after the flower has fallen, and the ſeed-veſſel is ripe. Some of the principal nerves of the leaf are repreſented.

N°. 7. The germen, or ſeed-bud, with the ſtyle, and ſtigma, of the ſize they appear a few days after the falling off of the flower.

N°. 8. One of the leaves of the flower cup.

N°. 9. A ſeed, of its natural ſize, when ripe.

N°. 10. A filament and anthera, of the natural ſize.

N°. 11 and 12. The antheræ, at the time of their ſhedding the pollen, or fecundating duſt, burſting laterally.

N°. XLII.

Obſervations on the conſtruction of Hoſpitals, by Mr. LE ROY. *Member of the Royal Academy of Sciences—(Extracted from an Eſſay on the ſubject, which, with ſeveral elegant plans, was tranſmitted by the author to the Society, but could not be inſerted entire, as it contained many remarks of a local nature, reſpecting Paris —only.*

THE conſtruction of Hoſpitals is in general objectionable, either becauſe many of the wards do not admit of perfect ventilation, or becauſe the air paſſes from one patient over another, by which means contagious diſeaſes are often ſpread.

To avoid theſe inconveniences, a large Hoſpital ſhould conſiſt of diſtinct and ſeperate buildings, each forming one ward, erected upon arches or columns, at a conſiderable height